

REMARKS

This is a full and timely response to the non-final Office Action mailed October 10, 2006. Upon entry of the foregoing amendments, claims 4, 10 and 13-15 are pending in the application. Claims 4 and 13 have been amended. Claims 1-3, 5-9, 11, 12, 16 and 17 have been canceled. The subject matter of amended claims 4 and 13 can be found in the originally filed specification in the third paragraph of page 1 and the first paragraph of page 3. Consequently, no new matter is added to the present application. In light of the foregoing amendments and following remarks, Applicants request reconsideration of the application and pending claims.

Claim Rejections Under 35 USC § 103 – Claims 4, 10, 13-15 and 17

A. Statement of the Rejections

Claims 4 and 10 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,664,556 to Doberenz, hereafter *Doberenz*, in view of U.S. Patent No. 5,016,046 to Nishiyama, hereafter *Nishiyama* and U.S. Patent No. 5,477,326 to Dosmann, hereafter *Dosmann*.

Claims 13-15 and 17 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Doberenz* in view of *Nishiyama*, *Dosmann* and U.S. Patent No. 5,117,118 to Fukuyama, hereafter *Fukuyama*.

B. Discussion of the Rejections

A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable

expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants' claim 17 has been canceled. Accordingly, the rejection of claim 17 is rendered moot.

Applicants' independent claims 4 and 13, as amended, as well as claim 10 as previously presented, comprise features that are not disclosed, taught, or suggested by the prior art.

1. Claims 4 and 10

Applicants' independent claim 4, as amended, is directed to a module for converting an optical signal to a digital signal that comprises "an externally generated synchronization input coupled to the sawtooth generator such that the sawtooth wave is synchronized to an external signal."

In contrast with Applicants' claimed module, the proposed combination of *Doberenz* in view of *Nishiyama* and *Dosmann* does not disclose, teach or suggest a module for converting an optical signal that comprises an externally generated synchronization input coupled to the sawtooth generator such that the sawtooth wave is synchronized to an external signal. *Doberenz*, *Nishiyama* and *Dosmann* are entirely silent regarding an externally generated synchronization input coupled to the sawtooth generator. In this regard, *Doberenz* (column 2, lines 44-50) teaches a signal (XY_AB_ON_0) generated by a microcontroller that provides power to LEDs to save power. Output from the LEDs is used in a quadrature phase decoding process to determine movement of a pointing device. As indicated in *Doberenz* FIG. 3, the signal has a 25% duty cycle, which results in the LEDs using 25% of the power that they would if they were on full time. *Doberenz* (FIG. 1) clearly shows the x-axis portion of a circuit for generating in-phase and quadrature phase output signals that includes LED LD402. Thus, *Doberenz* teaches an internal signal that is used to both control the LEDs (e.g., LD402) and to synchronize ramp generator 18 and the operation of comparator U401. An internal signal that controls LEDs, a ramp generator and a comparator, does not disclose, teach or suggest Applicants' claimed externally generated synchronization input coupled to the sawtooth generator such that the sawtooth wave is synchronized to an external signal. Accordingly, the proposed

combination fails to establish a *prima facie* case of obviousness as to Applicants' amended independent claim 4 and the rejection of claim 4 under 35 U.S.C. § 103(a) should be withdrawn.

Applicants' independent claim 10, as previously presented, is directed to a method that comprises at least the step of "generating a sawtooth wave synchronized to an external signal."

In contrast with Applicants' claimed method, the proposed combination of *Doberenz* in view of *Nishiyama* and *Dosmann* does not disclose, teach or suggest the step of generating a sawtooth wave synchronized to an external signal. *Doberenz*, *Nishiyama* and *Dosmann* are entirely silent regarding the step of generating a sawtooth wave synchronized to an external signal. As shown above, *Doberenz* teaches an internal signal that controls LEDs, a ramp generator and a comparator. An internal signal that controls LEDs, a ramp generator and a comparator does not disclose, teach or suggest a sawtooth wave synchronized to an external signal. Applicants' external signal (122, 140), as exemplified in FIGs. 1 and 3 of the present application, is received from an external source and applied at an input of a sawtooth generator to synchronize the sawtooth generator to the external source. Accordingly, the proposed combination fails to establish a *prima facie* case of obviousness as to Applicants' independent claim 10 and the rejection of claim 10 under 35 U.S.C. § 103(a) should be withdrawn.

2. Claims 13 - 15

Applicants' independent claim 13, as amended, is directed to an apparatus that comprises at least "a sawtooth generator configured to produce a sawtooth wave responsive to an external synchronization signal provided via the synchronization pin."

In contrast with Applicants' claimed apparatus, the proposed combination of *Doberenz* in view of *Nishiyama*, *Dosmann* and *Fukuyama* does not disclose, teach or suggest a sawtooth generator configured to produce a sawtooth wave responsive to an external synchronization signal provided via the synchronization pin. *Doberenz*, *Nishiyama*, *Dosmann*, and *Fukuyama* are entirely silent regarding a sawtooth generator configured to produce a sawtooth wave responsive to an external

synchronization signal provided via the synchronization pin. *Doberenz*, *Nishiyama* and *Dosmann* are entirely silent regarding an externally generated synchronization input coupled to the sawtooth generator.

In this regard, *Doberenz* (column 2, lines 44-50) teaches a signal (XY_AB_ON_0) generated by a microcontroller that provides power to LEDs to save power. Output from the LEDs is used in a quadrature phase decoding process to determine movement of a pointing device. As indicated in *Doberenz* FIG. 3, the signal has a 25% duty cycle, which results in the LEDs using 25% of the power that they would if they were on full time. *Doberenz* (FIG. 1) clearly shows the x-axis portion of a circuit for generating in-phase and quadrature phase output signals that includes LED LD402. Thus, *Doberenz* teaches an internal signal that is used to both control the LEDs (e.g., LD402) and to synchronize ramp generator 18 and the operation of comparator U401. An internal signal that controls LEDs, a ramp generator and a comparator, does not disclose, teach or suggest Applicants' claimed apparatus which comprises a sawtooth generator configured to produce a sawtooth wave responsive to an external synchronization signal provided via the synchronization pin. Accordingly, the proposed combination fails to establish a *prima facie* case of obviousness as to Applicants' amended independent claim 13 and the rejection of claim 13 under 35 U.S.C. § 103(a) should be withdrawn.

For at least the reason that claims 14 and 15 depend directly or indirectly from claim 13 and include all the features of independent claim 13, the rejection of claims 14 and 15 under 35 U.S.C. § 103(a) should also be withdrawn. *In re Fine*, 837 F.2d 1071, 5 USPQ 2d 1596, 1598 (Fed. Cir. 1998).

CONCLUSION

For at least the reasons set forth above, Applicants respectfully submit that pending claims 4, 10 and 13-15 are allowable over the cited art of record and the present application is in condition for allowance. Accordingly, a Notice of Allowance is respectfully solicited. Should the Examiner have any comments regarding the Applicants' response, Applicants request that the Examiner telephone Applicants' undersigned attorney.

Respectfully submitted,

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